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THERMAL & MOISTURE PROTECTION

SECTION 07120

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SECTION 07120

FLUID-APPLIED WATERPROOFING

PART 1 GENERAL

1.1 SUMMARY (Not Applicable)

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 208	(1982) Insulating Board (Cellulosic Fiber), Structural and Decorative
ASTM C 726	(1988) Mineral Fiber and Mineral Fiber, Rigid Cellular Polyurethane Composite Roof Insulation Board
ASTM D 412	(1987) Rubber Properties in Tension
ASTM D 471	(1979) Rubber Properties - Effect of Liquids
ASTM D 746	(1987) Brittleness Temperature of Plastics and Elastomers by Impact
ASTM D 2240	(1986) Rubber Property - Durometer Hardness
ASTM E 96	(1990) Water Vapor Transmission of Materials

FEDERAL SPECIFICATIONS (FS)

FS TT-S-0027E	(Rev. E; Am. 3) Sealing Compound: Elastomeric Type, Multi-Component (for Caulking, Sealing, and Glazing in Buildings and Other Structures)

SUBMITTALS

Government Approval is required for submittals with a "GA" designation; submittals having and "FIO: designation are for information only. The following shall be submitted in accordance with SECTION 01300 SUBMITTALS:

SD-06 Instructions

Fluid-Applied Waterproofing; GA.

Manufacturer's instructions for installation of the fluid-applied waterproofing.

SD-13 Certificates

Materials; GA.

Manufacturer's certification of compliance attesting that the materials meet the requirements of the specification under which it is furnished.

SD-14 Samples

Membranes and Flashing Materials; GA.

Sample of membrane material, 8 ounces of each material. Flashing materials, 1 by 1 foot sample.

DELIVERY AND STORAGE

Deliver and store materials out of the weather, in manufacturer's original packaging and with brand name and product identification clearly marked thereon. Materials with shelf life limitations shall be labeled with expiration date or date of manufacture. Deliver materials in sufficient quantity so that the work continues without interruption.

GENERAL REQUIREMENTS

A modified elastomer or a bitumen modified elastomer shall be used to waterproof joints, fasteners and other penetrations for corrugated structural plate magazine structures. Waterproofing work shall proceed only when weather conditions comply with manufacturer's recommendations. The material shall be fluid at 40 degrees F, suitable for application with equipment no more complex than airless spray guns when provided with suitable tips and powered by a conventional 150 cfm air compressor. Required surface preparation solvents and tools, flashings, and protection course shall be included. The waterproofing materials manufacturer shall have not less than 5 years of successful experience in supplying the principal materials required. The waterproofing work, including all flashing, sealants, and protection course, shall be installed specializing in this type of work.

PART 2 PRODUCTS

2.1 WATERPROOFING MEMBRANE

Waterproofing membrane shall be one of the following:

1 One-Component Membrane

A one-component polyurethane rubber based liquid membrane material, self bonding type, compounded specifically for the application methods to be used, not less than 97 percent solids and 6 month shelf life in the uncured state, tested by the manufacturer to comply with the following requirements for the cured membrane:

Tensile Strength (ASTM D 412)	60 psi, minimum
Elongation (ASTM D 412)	400 percent, minimum
Hardness, Shore A (ASTM D 2240)	5 to 30
Water Absorption (ASTM D 471)	maximum 1.0 percent for 21 days at 75 degrees F
Low Temperature Brittleness (ASTM D 746)	-40 degrees F

2.1.2 Two-Component Membrane (Alternate)

A two-component, bitumen modified, moisture cured urethane waterproofing system, conforming to the following requirements:

Elongation (ASTM D 412)	750 percent, minimum
Tensile Strength (ASTM D 412)	175 psi, minimum
Adhesion Strength, unprimed concrete (FS TT-S-0027E)	15 psi
Recovery from 350 Elongation (ASTM D 412)	95 percent
Tear Resistance (ASTM D 412, Die C)	60 psi
Water Absorption (ASTM D 471)	2-5 percent for 6 months at 75 degrees F
Water Vapor Transmission at 100 degrees F (ASTM E 96)	0.01 metric perms * cm
Low Temperature Brittleness (ASTM D 412)	Elongation 500 percent at -20 degrees F
High Temperature Aging, elongation change after 336 hours at 180 degrees F (ASTM D 412)	Decreased from 730 percent to 400 percent
Hardness in 336 hours at 75 degrees F (ASTM D 412)	30 Shore A horizontal 45 Shore A vertical
Service Temperature (ASTM D 2240)	-40 degrees F to +150 degrees F

NOTE: *Metric perms = gm/M (24 hours) (mm Hg)

2.2 PRIMER AND JOINT SEALANT

Primer and joint sealant shall be as recommended by the manufacturer of the fluid-applied waterproofing liquid compound.

2.3 ELASTIC SHEET FLASHING

Elastic sheet flashing shall be as recommended by the manufacturer of the fluid-applied waterproofing liquid compound. The elastic sheeting shall be a black polyvinyl chloride resin alloyed with plasticizers and other modifiers, formed into flexible sheets having 60 to 80 Shore A hardness, 2000 psi strength, 250 percent longation, -20 degrees F brittleness temperature, and shall be a minimum of 50 mils in thickness.

2.4 INSULATION BOARD

ASTM C 208, construction grade, 1/2-inch thick, asphalt saturated and coated; ASTM C 726, 7/16-inch thick; or prefabricated membrane board 1/4-inch thick, consisting of asphalt-saturated felt laminated under pressure to both sides or with felt laminated on the bottom and fiberglass mat laminated on top with a mineral-filled asphalt core.

PART 3 EXECUTION

SURFACE PREPARATION

Work shall not proceed until the bolts have been tightened and the surface has been cleaned of any materials detrimental to adhesion. The final cleaning shall be by spraying or wiping with methyl ethyl ketone to remove residual oil or grease. The surface shall be coated with vinyl-type wash coat applied by brush or spray at 250 to 300 square feet per gallon. A wet spray shall be maintained. The finish coat material shall be applied as soon as practicable after a minimum of 1 hour for drying but within 24 hours maximum. Sheet type flashings shall be installed where shown with a rubber base adhesive as recommended by the waterproofing compound manufacturer.

APPLICATION

Prior to setting the first course of steel plates into the channel, on the topside of the curb, channel shall be filled with fluid waterproofing to a minimum depth of 3/4 inch. When installing the plates, the seal shall cover the edge of the plates. The remaining void on both sides of plate shall be filled after plates are engaged with portland cement grout. The exterior side shall be formed to a cove as shown. A heavy application of fluid waterproofing shall be made to the cove area. This shall be followed by covering both the curb and the steel area at least 10 inches above the cove with the fluid waterproofing. Bolt heads and joint laps shall be covered with fluid applied waterproofing membrane uniformly applied by methods and equipment recommended by the manufacturer to a minimum thickness of 60 mils over and around the bolt heads. After this application has cured, a second application shall be made to cover the joint laps and the bolt heads to an additional 60 mil thickness. The elastic sheet-type flashings shall be installed where shown with a rubber-base adhesive as recommended by the fluid-applied waterproofing manufacturer. Protection course shall be installed with 8-inch wide boards over cured membrane areas after testing, without delay, so that period of exposure will be minimized. The adhesive and method of application shall be as required by the fluid waterproofing manufacturer.

3.3 TESTS

Variations in thickness will be determined by the Contracting Officer, by gouging the membrane in place, or by a sampling and testing procedure recommended by the manufacturer. Contractor shall correct all defects. The product containers shall be retained for the purpose of determining, by area measure in relation to quantity of product used, that the actual average thickness of membrane complies with the requirements specified.

-- End of Section